

Foreign Bank Acquisitions and Outreach:

Evidence from Mexico

Thorsten Beck

Maria Soledad Martinez Peria

The World Bank
Development Research Group
Finance and Private Sector Team
January 2008



Abstract

Recently, developing countries have witnessed a sharp increase in foreign bank participation. The authors examine the impact on banking outreach using newly gathered data for Mexico, where foreign bank participation rose from 2 percent to 83 percent of assets during 1997-2005. Country-, bank-, and bank-municipality level estimations show a decline in the

number of deposit and loan accounts. While country- and bank-level estimations indicate an increase in the share of municipalities with bank branches and in the likelihood of bank presence, bank-municipality regressions show that only rich and urban municipalities benefited. Overall, the evidence is consistent with a decline in outreach.

This paper—a product of the Finance and Private Sector Team, Development Research Group—is part of a larger effort in the department to understand the effect of foreign bank entry on access to financial services. Policy Research Working Papers are also posted on the Web at <http://econ.worldbank.org>. The authors may be contacted at tbeck@worldbank.org and mmartinezperia@worldbank.org.

The Policy Research Working Paper Series disseminates the findings of work in progress to encourage the exchange of ideas about development issues. An objective of the series is to get the findings out quickly, even if the presentations are less than fully polished. The papers carry the names of the authors and should be cited accordingly. The findings, interpretations, and conclusions expressed in this paper are entirely those of the authors. They do not necessarily represent the views of the International Bank for Reconstruction and Development/World Bank and its affiliated organizations, or those of the Executive Directors of the World Bank or the governments they represent.

Foreign Bank Participation and Outreach: Evidence from Mexico

Thorsten Beck and Maria Soledad Martinez Peria *

JEL Classification: F23, F36, G21, O54

Keywords: banking sector outreach; foreign bank entry; Mexico

1

* The authors are with the World Bank's research department. We thank George Clarke, Aart Kraay, Fabrizio López Gallo, Inessa Love, David McKenzie, Pascual O'Dougherty, Sergio Schmukler, Costas Stephanou and seminar participants at the World Bank, Harvard Business School, IMF, and Tilburg University for many helpful comments and discussions. Javier Ayala and Soledad López provided excellent research assistance. This paper was written as part of a broader project on trade in financial services in Latin America and the Caribbean Region. The paper's findings, interpretations, and conclusions are entirely those of the authors and do not necessarily represent the views of the World Bank, its Executive Directors, or the countries they represent. Corresponding author: Maria Soledad Martinez Peria, Finance and Private Sector Development Research Group, World Bank, 1818 H St., N.W., MSN MC 3-307, Washington D.C. 20433. E-mail: mmartinezperia@worldbank.org

During the 1990s, many developing countries embraced financial globalization and, in particular, welcomed foreign banks into their banking sectors. Micco, Panizza, and Yañez (2006) report that the average level of foreign bank participation among developing countries (as measured by the share of assets held by foreign banks) rose from 18 to 33 percent between 1995 and 2002.¹ Arguably, nowhere has the increase in foreign bank participation been more dramatic than in the case of Mexico. Over this period, the share of assets held by foreign banks rose from 2 to almost 82 percent. Mostly, the increase in foreign bank participation in Mexico resulted from foreign acquisitions of domestic banks, as opposed to de novo foreign bank entry. By 2005, foreign bank participation was close to 83 percent of assets and five of the top six banks in the system had been acquired by foreigners.

This study examines how banking sector outreach or breadth – i.e., the extent to which the banking sector caters to a large percentage of the population throughout the country – changed during a period of drastic increase in foreign bank presence, driven by foreign acquisitions. Since we do not have information on the actual share of the population that has access to or uses banking services, we employ a number of proxy measures of outreach. In particular, we track the behavior of the number or share of municipalities where banks are present and the number of branches, loans, and deposit accounts. First, using quarterly country-level data we assess how the share of municipalities with branches, the number of branches, deposit accounts, and loan accounts per capita at the country-level changed as foreign bank participation increased due to foreign acquisitions. We also separately examine changes in outreach for domestic and foreign banks to determine whether domestic banks off-set foreign bank behavior. Second, using bank-level data, we examine how foreign bank outreach changed after foreign acquisitions. Again, we focus on the number of municipalities with bank presence,

¹ Their sample covers 104 developing countries across all regions.

the number of branches, loans, and deposit accounts. Contrary to the country-level regressions where identification is weak (particularly because omitted factors might be driving the link between outreach and foreign bank presence), in the bank-level regressions, we identify the effects of foreign acquisitions by comparing results for banks that were acquired at different points in time and by including as a control group a similarly large bank that remained domestic throughout the sample (Banorte). Finally, we conduct a more disaggregated examination using bank-municipality-level data.² In this context, we examine the extent to which changes in outreach within a municipality varied after bank acquisitions by foreigners depending on the initial level of GDP per capita and the degree of urbanization of the municipality (i.e., the share of rural population). As in the bank-level regressions, identification hinges on comparing acquisitions at different moments in time and benchmarking the effects to a bank that was never acquired.

An extensive literature has examined many of the consequences of financial liberalization, in general, and of foreign bank participation, more specifically, in developing countries.³ In particular, the implications of foreign bank entry for bank efficiency, competition, stability, and access to credit have been investigated by cross-country and country-specific studies, using an array of different data sources.⁴ Studies on the impact of foreign bank participation on competition and efficiency suggest that foreign bank entry can bring potential gains in this area except in environments that limit competitive forces, such as when bank concentration is high, bank activities are restricted, and bank entry and exit is difficult (see

² What in Mexico are known as “municipios”, which we translate as municipalities, are similar to what in the US are referred to as counties.

³ For studies on the effect of capital account and equity markets liberalization, see among others, Henry (2003), Bekaert, Harvey, and Lundblad (2005) and Bekaert, Harvey, Lundblad, and Sigel (2007).

⁴ See Clarke, Cull, Martinez Peria, and Sanchez (2003) and Cull and Martinez Peria (2007) for a review of the literature.

Barajas, Steiner, and Salazar (2000), Denizer (2000), Claessens, Demirguc-Kunt, and Huizinga (2001), Unite and Sullivan (2002), Claessens and Laeven (2003), Claessens and Lee (2003), Martinez Peria and Mody (2004), Levy-Yeyati and Micco (2007)). The research on foreign bank participation and stability concludes that for the most part foreign banks contribute to banking stability by continuing to lend when faced by financial crises and by lending more under these circumstances than their domestic counterparts (see Goldberg, Dages, and Kinney (2000), Crystal, Dages, and Goldberg (2001), Goldberg (2002), Martinez Peria, Powell, and Vladkova-Hollar (2005), Detragiache and Gupta (2006), De Haas and van Lelyveld (2006)).

The literature on the implications of foreign bank participation for access to finance has primarily focused on the impact on lending to small and informationally opaque firms. To date, the evidence on this issue is mixed. Using bank-level data, Berger, Klapper, and Udell (2001) and Mian (2006) present results for Argentina and Pakistan, respectively, that suggest that foreign banks limit access and serve only the largest and most transparent firms. On the other hand, also using bank-level data, Clarke, Cull, Martinez Peria, and Sanchez (2005) find evidence that large foreign banks surpass their domestic counterpart in the share and growth of lending to SMEs in Argentina, Chile, Colombia, and Peru. Using firm-level data for India, Gormley (2006) finds that on average firms located in districts with newly established foreign banks are less likely to get long-term financing, but this effect is stronger among the more opaque firms. On the other hand, cross-country research also using firm-level data conducted by Giannetti and Ongena (2005) and Clarke, Cull, and Martinez Peria (2006) indicates that though larger firms benefit more from foreign bank presence, even small companies enjoy greater access to credit when foreign bank participation increases. Finally, taking a more aggregate perspective, using country-level data for 86 low and lower income countries, Detragiache, Tressel, and Gupta (2006) find

that foreign bank participation is associated with less credit to the banking sector in cross-sectional and panel tests.

In the specific case of Mexico, a number of papers have documented the impact of foreign bank entry into this country. Looking at the period immediately following the 1994 Peso crisis, when foreign bank participation was low and dominated by wholesale banks, Goldberg, Dages, and Kinney (2000) and Peek and Rosengren (2000) conclude that foreign banks in Mexico were not volatile lenders, did not retrench in the aftermath of the crisis and, in fact, exhibited higher and more stable loan growth rates than their domestic counterparts. On the other hand, analyzing the effects of foreign bank penetration in Mexico during 1997-2004, when foreign bank participation rose to over 80 percent and five of the largest six banks were acquired, Haber and Musacchio (2005) and Schulz (2006) come to less optimistic conclusions. The first study finds that foreign banks granted less credit, screened loans more intensively (as evidenced by lower non-performing loan ratios), and charged lower interest rate spreads than domestic banks to attract lower risk credits. However, foreign banks were more profitable than their domestic counterparts because their market power allowed them to charge higher fees. The second study concludes that foreign bank participation had a positive, but limited impact on banking sector development. More specifically, Schulz (2006) argues that the main contribution of foreign bank entry was to help recapitalize the banking sector and to improve its asset quality, but had limited effects on efficiency or lending.

Our study contributes to the literature on foreign bank participation – both in general and for the specific case of Mexico – by analyzing the link between foreign bank acquisitions and outreach. This is an interesting and policy-relevant question that is ex-ante unclear and has been

largely unexplored by the empirical literature.⁵ Contrasting predictions can be derived from existing studies on foreign bank lending behavior. In particular, studies that predict that foreign banks tend to “cherry pick” and lend only to the largest most transparent firms (e.g., Detragiache, Gupta, and Tressel (2005), Gormley (2006), and Mian (2006)) imply that foreign bank acquisitions would be negatively related to outreach, since greater outreach is associated with a larger number of loans and a wider branch network reaching smaller clients. For example, Detragiache, Gupta, and Tressel (2005) develop a model where if foreign banks are better at monitoring high-end customers (for which lending is based on “hard” information, such as accounting ratios or collateral values), foreign bank entry benefits them but hurts others and welfare worsens.⁶ On the other hand, studies that argue that large and foreign banks have superior transaction and risk management technologies that enable them to reach all types of clients including small ones (Berger and Udell, 2006), suggest a potential positive association between foreign acquisitions and outreach. Finally, there is the argument that even if foreign banks do not cater themselves to small clients, outreach could increase if domestic banks are forced to move down the market, expanding their outreach to serve smaller clients.

Our results are generally consistent with a decline in outreach following foreign bank acquisitions in Mexico during the period 1997-2005. Country-, bank-, and bank-municipality level estimations show a decline in the number of deposit and loan accounts following acquisitions. Furthermore, this decline is found to be larger in poorer and more rural

⁵ Using country-level data for 2003-04, Detragiache, Tressel, and Gupta (2006) offer evidence for a small sample of low and lower income (18) countries of a negative correlation between measures of outreach (such as branches, ATMs, loans and deposits per capita) and foreign bank participation. For a larger sample of countries (99), using the same outreach indicators, Beck, Demirguc-Kunt, and Martinez Peria (2007) find a negative association of loan and deposit accounts per capita and the foreign bank share, but no significant association with branch or ATM penetration.

⁶ The idea that foreign banks have a comparative advantage at making loans based on “hard” as opposed to “soft” information is rooted in the notion that large and complex institutions or financial institutions for which the headquarters are far away have difficulty in processing and transmitting soft information through their formalized communication channels (See Stein (2002) and Mian (2006)).

municipalities. Domestic banks only partially offset the decline in foreign bank lending. Finally, while country- and bank-level estimations indicate an increase in the share of municipalities with bank branches and in the likelihood of bank presence, bank-municipality- level regressions show that only rich and urban municipalities benefited.

Though our results withstand a number of robustness tests, several notes of caution are warranted. First, in our country-level regressions, we cannot eliminate the possibility that the increase in foreign bank participation and the contemporaneous changes in outreach are driven by omitted factors. Identification in those estimations is weak and those regressions are only presented as suggestive evidence. Bank- and municipality-level regressions, however, allow for a cleaner identification of the effect of foreign entry, relying on the fact that acquisitions took place at different points in time and controlling for the operations of a similar bank that remained domestic. Second, our outreach indicators are admittedly crude and are not exact measures of the share of households that has access to or uses banking services. Cross-country comparisons, however, have shown a close link between outreach indicators such as branches, deposit, and loan accounts per capita and the share of households that uses banking services (Beck, Demirguc-Kunt and Martinez Peria (2007), Honohan (2007)). Third, the period we study is one immediately following a severe crisis in Mexico and it is possible that taking a longer horizon could yield different results. Finally, while our study provides new and robust evidence on how outreach changed during a period of rising foreign bank participation, with important implications for other countries, such inferences have to be made with caution. While Mexico experienced foreign bank entry through the acquisition of domestic private entities by foreign banks, there are different patterns of foreign bank entry around the world, ranging from heavy de

novo entry to entry of foreign banks through the privatization of government-owned banks and results might vary in those cases.

The rest of the paper is organized as follows. Section II provides an account of the changes in bank ownership experienced by the Mexican banking sector since the early 1990s. Section III describes the data used, while section IV lays out the methodology pursued to examine how outreach changed along with the increase in foreign bank participation. Section V presents our empirical results. Section VI concludes.

II. The Mexican banking sector: from government to foreign ownership

In the span of two decades, the Mexican banking sector experienced an incredible transformation going from a government run sector to a privately, yet exclusively, domestically owned one, only to end up today as a sector dominated by foreign banks. Below we provide an account of the significant changes in ownership the Mexican banking sector underwent in recent years. Table I illustrates the development of the Mexican banking system from 1990 to 2005, showing the number of government, private domestically-owned banks, and foreign-owned banks operating in Mexico over the period.

Following the 1982 debt crisis, Mexican banks were nationalized under the López Portillo presidency and remained in government hands until 1991. During this period, banks primarily used their deposits to fund the public sector. In 1986, for example, over 60 percent of bank credit went to the government (Gruben and McComb (1997)). After a decade of government ownership, a process of rapid bank privatization took place between June 1991 and July 1992 under the Salinas de Gortari administration.

According to Schulz (2006), the new owners had little banking experience and severely mismanaged the banks.⁷ Haber (2005) argues that banks' behavior between 1991 and 1995 was also consistent with a tunneling view proposed by La Porta, Lopez-de-Silanes, and Zamarrita (2003) by which shrewd bankers took advantage of the lax regulatory and supervisory environment in Mexico to engage in widespread insider lending. Others like Gruben and McComb (1997) argue that banks' aggressive lending practices during the post-privatization period were fueled by a struggle for market share. Regardless of the reasons behind events, bank credit and non-performing loans grew at alarming rates; total real bank lending doubled within three years and non-performing loans rose to 17.1 percent by December 2004 (considering loan rediscounts as non-performing loans). The on-going build up of non-performing loans was exacerbated by the macro imbalances that eventually led to the devaluation of the peso and the economic and financial crisis that ensued at the end of 1994.

Up until 1994, the only foreign bank in operation in Mexico was Citibank, which had been established in 1929, before legislation restricting foreign bank participation was passed in 1966. The North American Free Trade Agreement (NAFTA) was the first attempt by the Mexican government to liberalize the banking sector, albeit at a very slow pace.⁸ The treaty, which came into effect on January 1, 1994, allowed the establishment of chartered subsidiaries. Still, NAFTA restricted foreign bank participation severely, providing that US and Canadian banks could not own more than 30 percent of a Mexican bank's capital (Haber (2005)). Furthermore, banks from the US and Canada could not acquire a controlling stake in any bank whose market share exceeded 1.5 percent and the total market share under foreign control could

⁷ Also, Haber (2005) argues that payment rules were very lax and bankers had little of their own capital at risk.

⁸ While a number of papers have looked at the implications of NAFTA on the Mexican economy, few have examined the effects on the financial sector. Furthermore, in most cases, the existing studies have been speculative and forward looking rather than based on solid empirical evidence (see Garber and Weisbrod (1993), Welch and Gunther (1994), White (1994), Glaessner and Oks (1998)).

not initially exceed 8 percent and it could only rise to 15 percent by the year 2000. Even after this period of transition, NAFTA recognized the right of the Mexican government to freeze the purchases of Mexican banks, if foreign banks as a group controlled more than one quarter of the market.

The 1994 Tequila crisis confronted the Mexican government with the urgent need to recapitalize banks, hastening the decision to rapidly open up the banking sector to foreign interests. By 1998, the government removed all remaining restrictions on foreign bank ownership. The liberalization of the foreign bank entry regime thus came as a result of the crisis, rather than the free trade agreement with the US and Canada.

Though there was an initial wave of foreign bank entry in 1995 (see Table I), driven mostly by investment or corporate banks, the nature and extent of foreign bank ownership in Mexico started to change drastically in 1997-1998. Table II provides a list and timeline for the foreign acquisitions that occurred between 1997 and 2005. Large international banks such as BBVA (Spain), Banco Santander (Spain), Citibank (US), HSBC (UK), and Scotiabank (Canada) acquired most of the largest Mexican banks. As a result of these acquisitions, the share of assets held by foreign banks increased from 15 percent in 1997 to 83 percent in 2005.

Foreign bank entry into Mexico allowed the recapitalization of the banking sector and the clean-up of banks' balance sheets. Between 1997 and 2003, capital ratios increased from 9 to 12 percent and non-performing loans declined from 10 to 3 percent (Haber (2005)). In what follows, we study how outreach changed in Mexico as foreign bank participation rose over the period 1997 to 2005.

III. Data

Our primary data consist of quarterly banks' balance sheets and unaudited information on the number of branches, deposit accounts, and loan accounts, from the Comisión Nacional Bancaria y de Valores (CNBV), the banking regulatory and supervisory authority in Mexico. While balance sheets are available at the bank level, data on branches, deposit, and loan accounts were obtained per bank, per municipality, per quarter. In other words, we have information on the number of branches, deposits, and loans for each bank in each of 1,192 municipalities for each quarter from 1997 through 2005.⁹ We also have information on the ownership type of all banks and the mergers and acquisitions that took place over the period 1997 through 2005 (Aguilar and Cabal (2004)).

From the data discussed above, we create different indicators of outreach. In particular, following previous work (Beck, Demirguc-Kunt, and Martinez Peria (2007)), we develop both indicators of access to (i.e., the possibility to use) and the actual use of financial services. In terms of access, we focus on the presence of bank branches across municipalities both at the aggregate, i.e. Mexico-wide level (share of municipalities served), the bank level (number of municipalities served) and the bank-municipality-level (probability of a bank being present or operating a branch in a specific municipality). We also consider the number of branches per capita at the country-level and the log of the number of branches at the bank and bank-municipality levels. These indicators are proxies for the extent to which the Mexican population as a whole and across different municipalities has geographic access to bank services, as well as, the geographic outreach effort of individual banks.

⁹ Mexico has close to 2,500 municipalities, however, detailed information is available for 1,163 municipalities. For 29 of the 32 Mexican states ("entidades federativas"), a category labeled "others" aggregates information for the smallest municipalities in each state. Hence, in total there are 1,192 observations in the municipality-level estimations.

While easy to understand and interpret, branch penetration has its shortcoming as an access indicator. First, technology has allowed banks to use alternative delivery channels such as ATMs, phones, and the Internet.¹⁰ Second, the presence of a branch in a specific municipality has its limit as a physical access indicator, as we do not know the geographic distribution of the population.¹¹

The presence of a branch in a municipality, and thus the physical possibility to use banking services, is only one dimension of bank outreach. Even if people have physical access, they might face other barriers, such as socio-economic restrictions, or they might not see the need for financial services. We consider two indicators of the actual use of financial services: the number of deposit and the number of loan accounts. Specifically, we consider deposit (loan) accounts per capita at the country level, as well as the number of deposit (loan) accounts for each bank over time, and for each institution in each municipality in every quarter. These indicators serve as proxy variables for the extent to which the Mexican population as a whole and across municipalities uses deposit and loan services, and for the extent to which different banks reach out to their clients of these two services in the aggregate and for each municipality.

As in the case of branch penetration, the deposit and loan account measures have their shortcomings. First, they do not capture the quality of services received by customers. Second, customers might have several deposit or loan accounts, so that these indicators are imperfect measures of the actual share of population using deposit and lending services in the banking system. However, Beck, Demirguc-Kunt, and Martinez Peria (2007) and Honohan (2007) show that these account indicators are good proxies for the share of the population that uses banking

¹⁰ Unfortunately, there is no data available on the access to or use of these alternative delivery channels at the municipality level.

¹¹ Specifically, the population center of a municipality without a branch might be geographically very close to another municipality with a branch.

services as reflected in household surveys (i.e., these outreach measures help predict the share of the population that uses banking services across countries for which household surveys on the use of banking services exist).

Since our objective is to examine changes in outreach, we focus exclusively on retail banks. We do not consider banks that only have a presence in Mexico City and are clearly either niche or investment banks. Hence, there are both domestic and foreign banks that are left out of the analysis for this reason. Table A.I lists the 14 banks included in our aggregate (country-level) analysis and, in parentheses, the banks that merged with any of these 14 banks during the sample period 1997 to 2005. The table also shows the initial (as of December 1997) size and outreach of each bank. It is important to note that we exclude Banco de Azteca, a domestic bank that entered the system in 2002 with a large branch network and high loan account penetration, because this bank operated as the consumer finance arm of a retail household item store (Electra) prior to 2002. Our findings are thus not driven by the conversion of Azteca into a bank.

In our bank-level analysis, we focus only on large retail banks. Specifically, we limit our sample to the five large banks that were acquired by foreigners and to Banorte, the only remaining large domestic bank. The reason for restricting the sample in this way is that, for the purpose of including a valid control group, Banorte is truly the only institution comparable in initial size and outreach to the foreign acquired banks (see Table A.I).

To measure foreign bank presence, we use information on the ownership type of specific banks as well as data on the overall market share of majority foreign-owned banks. In our aggregate analysis, we use balance sheet information across all Mexican banks to calculate the share of deposits (in terms of amounts) held by foreign-owned banks.¹² In our bank-level

¹² Our results remain unchanged if we measure foreign bank presence by the share of loans granted by foreign banks.

analysis, we construct virtual banks, i.e. we treat banks that merged during the sample period as one unit throughout the analysis.¹³ Doing so yields a sample of six large retail banks, five of which ended the sample period as foreign-owned, and Banorte, which remained domestic during the sample period. We identify foreign-acquired banks with a dummy variable that takes on value one for the five banks that ended the sample period as foreign-owned starting with the quarter after the acquisition (we label this variable Foreign Acquisition).

Finally, our empirical analysis also incorporates a number of other country- and bank-level variables, depending on the estimations. In the aggregate, country-level analysis, we control for Mexico's GDP per capita in constant prices. In the bank-level regressions, we control for a number of time-variant bank characteristics, such as size, loan-asset ratio, return on assets (ROA), operating costs, and net interest margins, computed from financial statements. In some bank-municipality-level regressions, we interact the foreign acquisition dummy with GDP per capita or the share of rural population at the municipality level in 1994. GDP and population data come from the Instituto Nacional de Estadística, Geografía e Informática (INEGI), Mexico's statistical institute.¹⁴

IV. Methodology

To analyze how outreach changed as a result of foreign bank acquisitions we exploit the variation in our data along the three dimensions of time, banks, and municipalities. Specifically,

¹³ Take the case of Banamex and Citibank. The latter acquired Banamex in 2001; we treat the two banks as one throughout the sample. Prior to 2001, we add the data for both banks to create one consolidated institution. We do this to avoid the artificial jump in outreach measures (branches, loans, and deposits) that we would otherwise observe at the time of the merger. We consider the merged bank to be foreign starting in 2001, since Citibank operations were very small relative to Banamex prior to 2001.

¹⁴ GDP data at the municipality level was constructed from value added information derived from the 1994 Economic Census conducted by INEGI. The share of rural population is defined as the share of population living in towns/villages with fewer than 2,500 inhabitants. Population data at the municipality level (both total population and the share of rural population) come from the 1995 Conteo de la Poblacion conducted by INEGI.

we conduct (i) country-level time-series regressions, with data aggregated across all banks and municipalities, (ii) bank panel regressions, with data aggregated for each bank over all municipalities, and (iii) bank-municipality panel regressions, with data for each bank within each municipality and each quarter. We discuss each specification in turn.

We investigate changes in outreach for the overall Mexican banking system by running the following specification:

$$Y_t = \alpha \text{ Foreign Share}_t + \beta \text{ GDP per Capita}_t + \varepsilon_t \quad (1)$$

where Y is one of our four outreach measures – share of municipalities with bank branches, bank branches per capita, number of deposit accounts per capita, and number of loan accounts per capita – measured in quarter t . Foreign Share, our measure of foreign bank presence, is the percentage of deposits held by foreign-owned banks. GDP per Capita, measured in constant pesos, is introduced to control for changes in economic conditions that might affect the demand and supply of financial services. The coefficient α indicates whether there is a positive, negative, or insignificant association between foreign bank participation and outreach over time at the country level. Since the deposit and loan account data for some banks show unexplainable large jumps, we control for these outliers by including quarterly dummy variables for these periods. Further, in the deposit and loan accounts per capita regressions, we introduce step variables that equal one after Bancomer (later merged with BBVA) changed its classification of deposit and loan accounts.¹⁵

We estimate three versions of equation (1): one where the outreach indicators are aggregated for all banks in the system, one where we add up the outreach measures for the domestic banks only and, finally, one where we consider only the outreach indicators for the five

¹⁵ Bancomer started including passbook savings accounts in their deposit account numbers in the second quarter of 2002, giving rise to a jump in deposit numbers. Also, there was a significant change in the classification of loan accounts in the first quarter of 1998.

banks that became foreign-owned during the sample period. Looking separately at the outreach indicators for domestic and foreign banks allows us to determine the reaction of both groups of banks to the increasing presence of foreign banks in the system.

Next, we examine the link between bank-level outreach and foreign bank acquisitions, by estimating the following equation:

$$Y_{i,t} = \alpha \text{ Foreign Acquisition}_{i,t} + b_i + q_t + \varepsilon_{i,t} \quad (2)$$

where Y refers to the log of the (i) number of municipalities where bank i is present (has a branch) at time t , (ii) number of branches, (iii) number of deposit accounts, and (iv) number of loan accounts for bank i in time t . We include bank and quarterly dummies, b_i and q_t , respectively, to lessen concerns about omitted factors affecting the link between foreign acquisitions and outreach. Foreign acquisition is a dummy that equals one starting with the period after bank i was acquired by a foreign bank. We include all outreach indicators in logs, so that α can be interpreted as the approximate percentage change in outreach following foreign acquisition.¹⁶ We estimate equation (2) only for the banks that became foreign-owned during the sample period plus Banorte, the only large bank that remained domestic during the sample period.¹⁷ By focusing on the six largest banks, we avoid our results being driven by the smaller banks, which had little outreach throughout the whole sample period. Also, for identification purposes, it is important to have a valid control group. Banorte is the only domestic bank that fits this criterion, since it is the only institution that compares in size and outreach to the banks that were eventually acquired (see Table A.I). The coefficient on Foreign Acquisition indicates how outreach changed after the top five banks in Mexico were acquired by foreigners banks compared to (i) before acquisition, (ii) banks that had not been acquired yet, and (iii) Banorte,

¹⁶ While the log specification allows interpreting the coefficient on the foreign acquisition dummy, α , as percentage change for small numbers, the exact percentage change is $\exp(\alpha)-1$.

¹⁷ Since we have only six banks, we do not present results with standard errors clustered by banks.

which was never acquired by foreigners during the sample period. To take account of some anomalous large jumps in deposit and loan accounts for some banks in some quarters, we drop these observations from the regression, while at the same time including step dummies for Bancomer in the deposit account and loan account regressions, as discussed above. In robustness tests, we control for other time-variant bank characteristics such as bank assets, loan asset ratios, overhead costs, and net interest margin and confirm our findings.

To assess the association between foreign acquisition and outreach within banks within municipalities, we utilize the following specification:

$$Y_{i,k,t} = \alpha \text{ Foreign Acquisition}_{i,t} + m_k + b_i + q_t + \varepsilon_{i,k,t} \quad (3)$$

where k is the municipality indicator and m_k are municipality fixed effects. We allow for correlation across the error terms of each municipality by computing clustered standard errors. In this specification, α indicates the effect of foreign acquisition on outreach by bank i in quarter t . As in the case of the equation (2), we include only the five banks acquired by foreigners and Banorte to properly identify the effect of acquisitions and to prevent small banks with little outreach from biasing our results.

We estimate equation (3) using two different functional forms depending on the measure of outreach we consider. First, we run probit regressions to estimate the likelihood that a bank is present in a given municipality and given quarter as function of foreign acquisition, controlling for municipality, bank, and time effects.¹⁸ The marginal effects estimated from these probit regressions capture the “extensive” margin of foreign acquisition. Second, we run an OLS regression to estimate the effect of foreign acquisitions on the log of the number of branches, deposit, and loan accounts in municipalities where banks are present. Here too, we control for

¹⁸ Given the biases that might arise from including numerous dummy variables in a probit regression, we also ran the regressions for the likelihood of bank presence using OLS, which yielded very similar findings.

bank, time, and municipality fixed effects. These regressions capture the “intensive” margin, as they do not include municipalities without bank presence.¹⁹ Finally, both in the case of the probit and OLS estimations, we present regressions where we allow for a differential effect of foreign bank presence across municipalities depending on their initial level of economic development and degree of urbanization by including interaction terms of Foreign Acquisition with municipality-level GDP per capita and the share of rural population in 1994, respectively. These interaction terms allow us to test whether changes in outreach were evenly spread throughout the Mexican territory.

V. Results

We begin by exploring simple correlations between foreign bank participation and banking outreach at the aggregate, Mexico-wide, level in the form of graphs. Also, we graphically depict how measures of outreach changed among the foreign-acquired banks after their acquisition. We, then, present regression results using time-series data for Mexico. Next, we turn to bank-level regressions. Finally, we report results using the bank-municipality panel estimations. In all cases, we use quarterly data for the period 1997-2005.

A. Foreign bank participation and outreach – ocular econometrics

Figures 1 through 4 illustrate developments in banking outreach and foreign bank participation in Mexico for the period 1997-2005. Specifically, we graph each of the outreach indicators together with the share of deposits held by foreign-owned banks. Figure 1 suggests a positive co-movement between the share of municipalities with bank presence (i.e., with bank

¹⁹ As in the bank-level regressions, we exclude the observations with anomalous jumps in deposit or loan account numbers.

branches) and the measure of foreign bank participation. Figure 2 shows a negative association between branches per capita and the importance of foreign banks, while Figure 3 shows first an increase then a decrease in deposit accounts per capita with the increase in foreign bank penetration. Figure 4 suggests a strong negative co-movement between loan accounts per capita and foreign bank participation until 2004. However, after this period both variables are trending upwards.

While the graphs described above show the aggregate changes in outreach as foreign bank presence rose, Figure 5 displays our four outreach indicators for the five banks that became foreign-owned eight quarters before and after acquisition. Hence, while figures 1 through 4 incorporate both the behavior of domestic and foreign banks, Figure 5 looks only at the latter. Specifically, we normalize municipalities served, number of branches, number of deposit accounts, and number of loan accounts to 100 in the quarter of acquisition (time $t=0$) and then average these indicators for all five banks that were acquired by foreigners for the eight quarters before and after their respective acquisition dates. While there is little movement and perhaps a slight increase in the municipalities served, both the number of deposit accounts and the number of branches fall after acquisition, to around 90 percent of the level at the time of acquisition. Most dramatic, however, is the decline in the number of loan accounts. The largest decline happens in the two years leading up to the acquisition when banks reduce their loan accounts by over 40 percent, while after acquisition, the number of loan accounts declines by another 25 percent. This is consistent with the finding by Haber and Musacchio (2005) that the decrease in private sector lending began before the acquisitions.

These univariate graphic illustrations are just that - illustrations. They do not control for other factors affecting outreach. Hence, we now turn to regression analysis for more formal hypothesis testing.

B. Foreign bank participation and outreach – the country-level evidence

Table III presents regressions using country-level data across 36 quarters between 1997 and 2005. The results in Table III Panel A show a positive association between the participation of foreign-owned banks and the share of municipalities served. On the other hand, we find a negative correlation between the foreign bank deposit share and branches and deposits per capita. While the foreign bank share enters negatively in the loans per capita regression, it is not significant.

In terms of economic significance, we find that our regressions predict that a 67 percentage point increase in the foreign bank share (the actual change observed between 1997 and 2005) is associated with a 4.4 percentage point increase in the share of municipalities served, relative to an initial share of 54 percent. On the other hand, this same increase in foreign bank participation is predicted to lead to a decline in 1.8 branches per 100,000 people and 46.6 deposit accounts per 1,000 people. This compares to initial values of 8 for branches per 100,000 and 268 for deposit accounts per 1,000 people. Hence, across the board the effects of changes in foreign bank participation appear to be sizeable and in relative terms (i.e., as a proportion of initial levels) the decline in branches and deposits seems to outweigh the increase in the share of municipalities served.

Table III Panel B and C consider the aggregate behavior of outreach measures for all domestic and, separately, all banks that became foreign-owned, respectively. We find that while

the share of municipalities served by foreign banks increased along with the rise in foreign bank participation, domestic banks were present in fewer municipalities as the foreign bank share increased. On the other hand, the number of branches per capita declined for both foreign and domestic banks, along with the rise in foreign bank participation. While deposits per capita fell for foreign banks, we do not observe a decline for domestic banks in response to the increase in foreign bank presence. Finally, loans per capita among foreign banks fell as their presence increased, while loans per capita rose among domestic banks. The opposing effects explain why overall there is no significant relationship between foreign bank share and loans per capita.

In summary, the evidence in Table III suggests that while more municipalities were being served as foreign bank penetration rose, branch penetration fell for all banks in the system. Deposits and loans per capita dropped for banks that became foreign, but the decline in loans was partly offset by the behavior of domestic banks, which seemed to have increased the number of loans as foreign banks gained market share in Mexico. In relative terms, the decline in branches and deposits outweigh the increase in the share of municipalities served, so, overall, the increase in foreign bank participation seems to have gone hand-in-hand with less and not more outreach. Finally, we also find that GDP per capita is positively and significantly associated with branch penetration of all banks and of the five banks that became foreign-owned, while it is positively and significantly associated with deposit and loan accounts per capita of domestic banks.

The results above are robust to a number of alternative estimations not shown but available upon request. First, the results remain the same if we lag the measure of bank participation to allow for a delayed response to ownership changes and to lessen concerns about endogeneity. Second, our findings do not vary if we control for changes in bank concentration, as

measured by the share of deposits held by the top three banks in Mexico. As foreign banks acquired domestic banks, concentration levels increased from the range of 50 to 60 percent. Some might argue that observed changes in outreach might be driven by changes in concentration as opposed to foreign presence. This does not appear to be the case in Mexico.

C. Foreign bank acquisitions and outreach – the bank-level evidence

While the aggregate (country-level) regressions explore the overall effect of foreign bank participation on outreach, bank-level regressions enable us to examine changes in outreach after acquisitions. Also, relative to the country-level regressions, the bank-level estimations allow for a better identification strategy, since we can examine acquisitions that occurred at different points in time and compare them to a bank that was never acquired. Specifically, Table IV presents bank-level regressions including the five banks that were acquired by foreigners - namely Banamex, Bancomer, Bitat, Inverlat, and Serfin - and Banorte, the only remaining large domestic bank.²⁰ Here the variable of interest is the foreign acquisition dummy which takes the value of one after the acquisitions.

The results in Table IV Panel A suggest that after foreign acquisition banks began to operate in a larger number of municipalities and increased their branch penetration, but at the same time the number of deposit and loan accounts dropped.²¹ These regressions control for bank and time specific effects, thus the effect of lower outreach after the acquisition by foreign banks is relative to the average level of outreach of each bank over the sample period 1997 to 2005 and the average level of outreach across the six banks in a specific quarter. These findings

²⁰ As discussed above, we do not include the smaller domestic banks, as they do not seem to be an appropriate control group.

²¹ When we focus only on the banks that were acquired by foreigners, the foreign acquisition dummy only enters significantly and negatively in the loan accounts regression.

are confirmed when we control for changes in Mexican GDP per capita instead of quarterly dummies.²²

The regressions in Panel B show the robustness of our findings to including several time-variant bank-level characteristics. Specifically, we include the log of assets to proxy for size, the loan-asset ratio to control for retail orientation, return on assets to capture banks' profitability, and operating costs relative to total assets, and net interest margins as a share of assets to account for variations in efficiency. Foreign acquisition continues to enter significantly, with the same sign and with almost identical coefficient sizes as in Panel A. Furthermore, none of the bank-level characteristics enters with a consistently significant coefficient across different dependent variables.²³

The economic effects of foreign acquisition are quite large, especially when it comes to loans. Foreign acquisition led to a 6 percent increase in the number of municipalities served and a 7 percent increase in the number of branches. On the other hand, it resulted in a 12 percent decline in deposits accounts and 59 percent fewer loan accounts. For the number of municipalities served and deposit and loan accounts, these results are largely consistent with what is observed in Figure 5 and the results of Table III Panel C. The results are different for the number of branches for which Figure 5 shows a decrease rather than an increase as in Table IV. The result on the number of branches is also in contrast to the aggregate finding in Table III of a decline with higher foreign bank participation. The difference in these results is driven by the fact that while the bank-level regressions include time dummies to control for country-wide trends, the estimation in Table III only controls for Mexico's GDP per capita.²⁴

²² These estimations are available upon request.

²³ They only become significant if we drop the bank dummies. Hence, it appears that financial characteristics are only significant in explaining cross-bank differences in outreach.

²⁴ In other words, if we drop the time dummies we get similar findings to those in Table III.

D. Foreign bank acquisitions and outreach – the bank-municipality-level evidence

While the results using country-wide time-series data for Mexico show the aggregate effect of foreign bank participation on outreach and the bank-level regressions allow us to identify changes in outreach following acquisitions, the bank-municipality regressions in Table V enable us to assess the effect of foreign acquisitions on outreach as a function of municipality characteristics such as income and degree of urbanity. Further, given that for each of the six banks we have for more than 1,163 municipalities over 36 quarters between 1997 and 2005, these specifications give us greater power and allow us to verify whether the findings at the national and bank-level hold up when we focus on a smaller geographical entity.²⁵ All regressions include municipality, bank, and quarter dummies, so that we measure the effect of foreign acquisition relative to the average for each bank, municipality, and time period. Panels A, B and C present (i) the baseline regression with the foreign acquisition dummy, (ii) regressions

²⁵ There are over 2,400 municipalities in Mexico; however, the available data aggregate the branches, deposits and loans for some of the smaller municipalities into a broader category labeled “others”. There are 29 states which report this “other” category. Combined the municipalities included under the “other” category account for less than 3 percent of the Mexican population.

with the foreign acquisition dummy and its interaction with GDP per capita, and (iii) regressions with the foreign acquisition dummy and its interaction with the rural population share, respectively.

Panel A of Table 6 suggests that the likelihood of bank presence in a given municipality increases after acquisition by a foreign bank, while the number of deposit and loan accounts decreases. Foreign acquisition enters positively and significantly in the probit regression and negatively and significantly in deposit and loan account regressions. It enters negatively, but insignificantly in the regressions for the number of branches. The economic significance is similar to the regression in Table IV: foreign acquisitions led to a 3 percent increase in the likelihood that the bank is present in the municipality, a 24 percent decrease in deposit accounts, and a 60 percent decrease in the number of loan accounts.

Panel B Table 6 results suggest that richer municipalities experience an increase in branches after foreign bank acquisition and a smaller decrease in the number of loan accounts. The interaction of foreign acquisition with municipality-level GDP per capita enters positively and significantly in the number of branches and loan account regressions, but insignificantly in the probit and deposit account regressions. Comparing the coefficient sizes on the foreign acquisition dummy and the interaction terms suggests that the effect of foreign bank acquisitions on the number of branches of a given bank in a given municipality is positive only above 3,100 Pesos GDP per capita in 1994. However, the effect is statistically significant only for municipalities with GDP per capita above 19,000 pesos (those in the top 1 percentile of the distribution). In the case of loan accounts, except for municipalities with over 45,000 Pesos in per capita income (those in the top 0.01 percentile), all other municipalities experienced a reduction in the number of loan accounts after foreign acquisitions. The increase in the

likelihood of bank presence and the decrease in the number of deposit accounts after foreign acquisition, on the other hand, are independent of the GDP per capita level of the municipality.

Panel C regressions suggest that the change in the likelihood of bank presence and the number of bank branches after foreign acquisitions depend on the degree of urbanity, while rural municipalities experienced a unequivocal stronger decrease in the number of deposit and loan accounts. The foreign acquisition dummy enters positively (negatively) and significantly in the probit and branch (deposit and loan accounts) regressions, while its interaction with the share of rural population enters negatively and significantly in all regressions. The coefficient sizes suggest that only municipalities with less than 66 percent rural population share experienced an increase in the likelihood of bank presence, after the bank was acquired by foreigners. In fact, the effect is positive and statistically significant for municipalities with a share of rural population below 50 percent. For municipalities with a share of rural population above this percentage the effect is negative, but not significant. Similarly, from the coefficient sizes we can infer that only municipalities with a share of rural population below 26 percent (i.e., 28.8 percent of municipalities) experienced an increase in branches after foreign acquisitions. However, this increase is statistically significant only for municipalities in the bottom 5 percentile of the distribution of the rural share (i.e., those with a rural share close to 1.5 percent). Municipalities with a rural share above 50 percent experienced an economically and statistically significant decline in the number of branches. The negative impact of foreign acquisitions on the number of deposit and loan accounts is exacerbated for rural municipalities. While municipalities with 22 percent rural population share (25th percentile) experienced a decrease of 22 percent (59 percent), municipalities with 71 percent rural population share (75th percentile) experience a decrease of 34 percent (68 percent) in the number of deposit (loan) accounts.

Summarizing, the bank-municipality regression results confirm the findings from the bank-level analysis that the probability of bank presence in a municipality increased after foreign acquisitions, while the number of deposit and loan accounts decreased. However, the positive effect of the geographic extension of foreign banks appears to be limited to urban areas, while the negative effect of foreign acquisitions on deposit and loan account penetration was stronger in rural and poorer areas. Finally, foreign acquisitions had a positive impact on branch penetration only in very urban and rich areas.

VI. Conclusions

Foreign bank entry is a new and significant phenomenon that many developing countries are experiencing nowadays as part of a general trend toward financial liberalization and globalization. Though a literature has emerged analyzing the impact of foreign bank participation on bank efficiency, stability, and access to small business finance, to our knowledge, no study had thoroughly examined the implications for banking sector outreach.

Using country-, bank- and bank-municipality- level data, this paper analyzes how outreach changed in Mexico, during a period of rapidly rising foreign bank presence resulting from foreign acquisitions. Our estimations show a consistent decline in deposit and loan accounts following acquisitions. On the other hand, while country- and bank-level estimations indicate an increase in the share of municipalities with bank branches and in the likelihood of bank presence, bank-municipality- level regressions show that only rich and urban municipalities benefited. Overall, we interpret our results as suggestive of a decline in outreach following foreign bank acquisitions, since banks intermediated fewer deposits and loans and increasingly concentrated their operations in rich and urban areas.

What drives the observed changes in outreach? At least two competing explanations might be consistent with our findings. First, changes in outreach might be driven by a need to reduce inefficiencies built before the 1994 crisis. In other words, the reduction in outreach could be a rational action by profit maximizing banks seeking to reduce their costs and become more efficient. However, both Haber and Musacchio (2005) and Schulz (2006) do not find significant efficiency gains after foreign bank acquisition. On the other hand, both find increases in the profitability of the five acquired banks driven by higher fees after they were taken over by foreigners. This points to a second explanation, i.e., the observed outreach patterns might reflect a deliberate strategy by foreign banks to cater to the upper end of the market (that is focus on the richer and more urban clients) consistent with the argument that foreign banks “cherry pick” their clients. Though it needs to be formally tested, this change in business strategy combined with an increase in profitability could have been made possible by the limited competition in the Mexican banking market over our sample period. Finally, whether the patterns described here will continue beyond our sample period or are specific to the early period of entry following the Tequila crisis will need to be examined in future research.

References

- Aguilar, Ana Luisa and Roberto Cabal, 2004, La evolución de la banca en México, Banco de México, Mimeo.
- Barajas, Adolfo, Steiner, Roberto, and Natalia Salazar, 2000, The impact of liberalization and foreign investment in Colombia's financial sector, *Journal of Development Economics* 63(1), 157-196.
- Beck, Thorsten, Demirguc-Kunt, Asli, and Maria Soledad Martinez Peria, 2007, Reaching out: Access to and use of banking services around the world, *Journal of Financial Economics* 85(1), 234-66.
- Bekaert, Geert, Harvey, Campbell, and Christian Lundblad, 2005, Does financial liberalization spur growth?, *Journal of Financial Economics* 77, 3-56.
- Bekaert, Geert, Harvey, Campbell, Lundblad, Christian, and Stephen Sigel, 2007, Growth opportunities and market integration, *Journal of Finance* 62, 1081-1138.
- Berger, Allen, Klapper, Leora, and Greg Udell, 2001, The ability of banks to lend to informationally opaque small businesses, *Journal of Banking and Finance* 25, 2127-2167.
- Berger, Allen, and Greg Udell, 2006, A more complete conceptual framework for SME finance, *Journal of Banking and Finance* 30(11), 2945-2966.
- Claessens, Stijn, Demirguc-Kunt, Asli, and Harry Huizinga, 2001, How does foreign entry affect domestic banking markets?, *Journal of Banking and Finance* 25 (5), 891-911.
- Claessens, Stijn, and Luc Laeven, 2003, What drives bank competition? Some international evidence, *Journal of Money, Credit and Banking* 36(3), 563-83.
- Claessens, Stijn, and Jong-Kun Lee, 2003. Foreign banks in low-income countries: Recent developments and impacts, in James Hanson, Patrick Honohan, and Giovanni Majnoni, eds.: *Globalization and National Financial Systems* (The World Bank Press, Washington D.C.).
- Clarke, George, Cull, Robert, and Maria Soledad Martinez Peria, 2006, Foreign bank participation and access to credit across firms in developing countries, *Journal of Comparative Economics* 34, 774-795.
- Clarke, George, Cull, Robert, Martinez Peria, Maria S., and Susana Sanchez, 2003, Foreign bank entry: Experience, implications for developing economies, and agenda for further research, *The World Bank Research Observer* 18 (1), 25-59.
- Clarke, George, Cull, Robert, Martinez Peria, Maria S., and Susana Sanchez, 2005, Bank lending to small businesses in Latin America: Does bank origin matter?, *Journal of Money, Credit, and Banking* 37 (1), 83-118.

Crystal, Jennifer, Dages, Gerard, and Linda Goldberg, 2001, Does foreign ownership contribute to sounder banks in emerging markets? The Latin American experience, in Robert Litan, Paul Masson, and Michael Pomerleano, eds.: *Open Doors: Foreign Participation in Financial Systems in Developing Countries* (Brooking Institution Press, Washington D.C.).

Cull, Robert, and Maria Soledad Martinez Peria, 2007, Foreign bank participation and crises in developing countries, in: Justin Robertson, ed: *Power and Politics After Financial Crises: Rethinking Foreign Opportunism in Emerging Markets* (Palgrave Macmillan, New York, NY).

De Hass, Ralph, and Iman Van Lelyveld, 2006, Foreign banks and credit stability in Central and Eastern Europe. A panel data analysis, *Journal of Banking and Finance* 30, 1927-1952.

Denizer, Cevet, 2000, Foreign entry in Turkey's banking sector, 1980-1997, in Stijn Claessens, and Marion Jansen, eds.: *The Internationalization of Financial Services: Issues and Lessons for Developing Countries* (Kluwer Academic, Boston, MA.).

Detragiache, Enrica, and Poonam Gupta, 2006, Foreign banks in emerging market crises: Evidence from Malaysia, *Journal of Financial Stability* 2(3), 217-242.

Detragiache, Enrica, Tressel, Thierry, and Poonam Gupta 2006, Foreign banks in poor countries: Theory and evidence, IMF Working Paper No. 06/18.

Garber, Peter, and Stephen Weisbrod, 1993, Opening the financial services market in Mexico, in Peter Garber, ed.: *The Mexico-U.S. Free Trade Agreement* (MIT Press, Cambridge, MA.).

Glaessner, Tom, and Daniel Oks, 1998, NAFTA, capital mobility, and Mexico's financial system, The World Bank Policy Research Working Paper Series 1984.

Giannetti, Mariassunta, and Steven Ongena, 2005, Financial integration and entrepreneurial activity: Evidence from foreign bank entry in emerging markets, ECB Working Paper No. 498.

Goldberg, Linda, 2002, When is U.S. bank lending to emerging markets volatile?, in Sebastian Edwards, S. and Jeffrey Frankel, eds.: *Preventing Currency Crises in Emerging Markets* (NBER and The University of Chicago Press).

Goldberg, Linda, Dages, Gerard, and Daniel Kinney, 2000, Foreign and domestic bank participation in emerging markets: Lessons from Mexico and Argentina, *Federal Reserve Bank of New York Economic Policy Review* 6(3).

Gormley, Todd, 2006, Banking competition in developing countries: Does foreign bank entry improve credit access?, Washington University in St. Louis, Mimeo.

Gruben, William, and Robert McComb, 1997, Liberalization, privatization and crash: Mexico's banking system in the 1990s, *Federal Reserve Bank of Dallas Economic Review* 21-30.

Gruben, William, Welch, John, and Jeffery Gunther, 1994, U.S. banks, competition and the Mexican banking system: How much will NAFTA matter?, Federal Reserve Bank of Dallas Economic Research Working Papers No.9410.

Haber, Stephen, 2005, Mexico's experiments with bank privatization and liberalization, 1991-2003, *Journal of Banking and Finance* 29, 2325-53.

Haber, Stephen, and Aldo Musacchio, 2005, Contract rights and risk aversion: Foreign banks and the Mexican economy, 1997-2000, Stanford Center for International Development Working Paper No. 267.

Henry, Peter, 2003, Capital account liberalization, the cost of capital and economic growth, *American Economic Review*, 93(2).

Honohan, Patrick, 2007, Cross-country variation in household access to financial services, World Bank, Mimeo.

La Porta, Rafael, Lopez-de-Silanes, Florencio, and Guillermo Zamarripa, 2003, Related lending, *Quarterly Journal of Economics* 118, 231-268.

Levy-Yeyati, Eduardo, and Alejandro Micco, 2007, Concentration and foreign penetration in Latin American banking sectors: Impact on competition and risk, *Journal of Banking and Finance* 31(6), 1633-47.

Martinez Peria, Maria Soledad, and Ashoka Mody, 2004, How foreign participation and market concentration impact bank spreads: Evidence from Latin America, *Journal of Money, Credit, and Banking* 36 (3), 511-537.

Martinez Peria, Maria Soledad, Powell, Andrew, and Ivanna Vladkova-Hollar, 2005, Banking on foreigners: The behavior of international bank claims on Latin America, 1985-2000, *IMF Staff Paper* 53(3).

Mian, Atif, 2006, Distance constraints: The limits of foreign lending in poor economies, *Journal of Finance* 61(3), 1465-1505.

Micco, Alejandro, Panizza, Ugo, and Monica Yañez, 2006, Bank ownership and performance: Does politics matter?, *Journal of Banking and Finance* 31(1), 219-241.

Peek, Joe, and Eric Rosengren, 2000, Implications of the globalization of the banking sector: The Latin American experience, *New England Economic Review*, September/October, Federal Reserve Bank of Boston.

Schulz, Heiner, 2006, Foreign banks in Mexico: New conquistadors or agents of change?, The Wharton School, Financial Institutions Center, Working Paper No. 06-11.

Uiboupin, Janek, 2004, Effects of foreign banks entry on bank performance in the CEE countries, Working Paper No. 33-2004, University of Tartu Faculty of Economics and Business Administration.

Unite, Angelo, and Michael Sullivan, 2002, The effect of foreign entry and ownership structure on the Philippine domestic banking sector, *Journal of Banking and Finance* 27, 2249-2271.

White, William R., 1994, The implications of the FTA and NAFTA for Canada and Mexico. Technical Paper No. 70, Bank of Canada.

Table I: Number and types of banks operating in Mexico, 1990-2005

	1990	1994	1995	1997	1999	2000	2001	2002	2005
Total number of banks	20	33	46	41	34	32	29	30	27
Government-owned banks	18	0	0	0	0	0	0	0	0
Private domestically-owned banks	1	31	29	21	17	13	11	12	12
Foreign-owned banks	1	2	17	20	17	19	18	18	15

Source: Aguilar and Cabal (2004).

Table II: Foreign acquisitions of Mexican banks

Year	Acquirer	Target	Resulting share of bank assets held by foreign banks
1997	Santander	Mexicano	14.63% ⁽¹⁾
1999	Santander	Serfin	31.34% ⁽²⁾
2000	BBVA	Bancomer	48.04% ⁽³⁾
2000	Scotiabank	Inverlat	55.36% ⁽⁴⁾
2001	Citibank	Banamex	75.50% ⁽⁵⁾
2002	HSBC	Bital	81.86% ⁽⁶⁾

- ⁽¹⁾ Banco Santander and Grupo Invermexico sign an agreement in the fourth quarter of 1996. The official merger happens in 1998, but in practice the banks operate as one since the first quarter of 1997.
- ⁽²⁾ In the third quarter of 1999, Serfin is taken over and absorbed by Santander Mexicano. The legal merger takes place in 2005, but in practice the management change occurs in 1999.
- ⁽³⁾ In the third quarter of 2000, BBVA acquires Bancomer.
- ⁽⁴⁾ Scotiabank acquires a majority of the shares of Inverlat in the fourth quarter of 2000.
- ⁽⁵⁾ Citibank acquires Banamex in the fourth quarter of 2001.
- ⁽⁶⁾ HSBC agrees to acquire Bital in the fourth quarter of 2002, the official merger takes place in the second quarter of 2003.

Table III: Foreign bank participation and outreach – Country-level time-series evidence

Regressions for deposit accounts per capita include the following dummies to control for outliers: first and second quarter of 1997; fourth quarter of 1998; second and fourth quarter of 2000; first, second, and third quarter of 2001; first and second quarter of 2003; first, third and fourth quarter of 2005. Regressions for loan accounts per capita include the following dummies to control for outliers: second, third, and fourth quarter of 1998; first quarter of 2001 and third and fourth quarter of 2003. We also include step dummies in the deposit (loan) accounts regressions that take on value one starting in the second quarter of 2002 (first quarter of 1998) to control for changes in the classification of deposits (loan) accounts by Bancomer. Robust t-statistics are in brackets. *, **, and *** denote significance at 10, 5, and 1 percent levels, respectively. Panel A shows results using data aggregated at the country-level across all banks. Panel B (C) aggregates data at the country-level for all domestic (foreign) banks only.

	Share of municipalities with branches	Branches per 100,000 people	Deposits accounts per 1,000 people	Loan accounts per 1,000 people
Panel A: Aggregating across all banks				
Foreign bank share (% of total deposits)	0.065*** [9.00]	-0.028*** [17.20]	-0.696*** [3.35]	-0.003 [1.59]
Country GDP per capita (in 000s of constant pesos)	-0.302 [1.02]	0.274*** [2.92]	7.238 [0.71]	0.128 [1.59]
Constant	57.471*** [13.00]	4.546*** [3.11]	175.427 [1.11]	-0.158 [0.13]
Observations	36	36	36	36
R-squared	0.79	0.86	0.87	0.77
Panel B: Aggregating across domestic banks				
Foreign bank share (% of total deposits)	-0.031*** [8.02]	-0.004*** [12.99]	0.013 [0.30]	0.001* [1.96]
Country GDP per capita (in 000s of constant pesos)	-0.159 [1.09]	-0.003 [0.23]	6.392** [2.67]	0.053** [2.32]
Constant	29.531*** [13.38]	1.545*** [8.57]	-65.026* [1.74]	-0.676* [1.95]
Observations	36	36	36	36
R-squared	0.76	0.89	0.71	0.48
Panel C: Aggregating across banks that became foreign				
Foreign bank share (% of total deposits)	0.067*** [10.10]	-0.024*** [16.97]	-0.726*** [4.76]	-0.004*** [3.27]
Country GDP per capita (in 000s of constant pesos)	0.036 [0.13]	0.277*** [3.24]	1.805 [0.30]	0.053 [0.92]
Constant	47.323*** [11.77]	3.001** [2.25]	225.703** [2.43]	0.818 [0.94]
Observations	36	36	36	36
R-squared	0.86	0.85	0.88	0.89

Table IV: Foreign bank acquisitions and outreach – Bank-level evidence

In the regressions for log of deposit accounts we drop the following observations since they are outliers: Banamex in first and second quarter of 1997; Bital-HSBC in third and fourth quarter of 2005; Banorte in the first quarter of 2005; Scotiabank in fourth quarter of 1998 and second quarter of 2000. In the regressions for log of loan accounts we drop the observations for Santander in the fourth quarter of 1998 and in the first quarter of 2001, Bital in the third and fourth quarter of 1998 and BBVA in the third and fourth quarter of 2003. We include step dummies in the observations for Bancomer in the deposit (loan) accounts regression that take on value one starting in the second quarter of 2002 (first quarter of 1998) to control for sudden reclassifications. Robust t-statistics are in brackets. *, **, and *** denote significance at 10, 5, and 1 percent levels, respectively.

	Log of number of municipalities with bank branches	Log of number of branches	Log of number of deposits	Log of number of loans
Panel A: Baseline regressions				
Foreign acquisition	0.058*** [3.73]	0.070*** [3.70]	-0.123** [2.57]	-0.883*** [8.26]
Constant	5.394*** [98.33]	6.741*** [178.36]	13.697*** [136.53]	9.507*** [31.85]
Observations	216	216	204	209
R-squared	0.98	0.98	0.94	0.83
Bank dummies	Yes	Yes	Yes	Yes
Time dummies	Yes	Yes	Yes	Yes
Panel B: Controlling for bank characteristics				
Foreign acquisition	0.054*** [3.47]	0.069*** [3.56]	-0.111** [2.25]	-0.855*** [7.93]
Log of total assets	0.022 [1.20]	0.021 [1.01]	-0.041 [0.99]	-0.149 [1.24]
Loan to asset ratio	-0.002 [0.03]	0.157* [1.75]	0.226 [1.55]	-0.679 [1.32]
Return on assets	-0.305 [0.53]	-1.204 [0.92]	4.248*** [2.64]	8.341 [1.13]
Overhead costs to assets	4.719** [2.23]	1.812 [0.61]	-10.342 [1.60]	-28.429 [1.62]
Net interest margin to assets	-0.176 [0.41]	0.318 [0.52]	-0.456 [0.58]	-3.538 [0.84]
Constant	5.695*** [21.92]	7.149*** [24.61]	14.166*** [26.17]	10.431*** [6.59]
Observations	216	216	204	209
R-squared	0.98	0.98	0.95	0.83
Bank dummies	Yes	Yes	Yes	Yes
Time dummies	Yes	Yes	Yes	Yes

Table V: Foreign bank acquisitions and outreach – Bank-municipality regressions

Regressions for log of deposit accounts include the following dummies to control for outliers for municipalities where the respective bank is present: Banamex in first and second quarter of 1997; Bital-HSBC in third and fourth quarter of 2005; Banorte in the first quarter of 2005; Scotiabank in fourth quarter of 1998 and second quarter of 2000. Regressions for log of loan accounts include the following dummies to control for outliers: Santander in the fourth quarter of 1998 and in the first quarter of 2001, BBVA in the third and fourth quarter of 2003, and Bital in the third and fourth quarter of 1998 for municipalities where the respective bank is present. We also include step dummies in the deposit (loan) accounts regressions for municipalities with presence of Bancomer that take on value one starting in the second quarter of 2002 (first quarter of 1998) to control for sudden reclassifications. The estimation of the probability of bank presence is conducted using a probit model. Robust t or z- statistics are reported in brackets. *, **, and *** denote significance at 10, 5, and 1 percent levels, respectively. Standard errors are clustered at the municipality level.

	Probability of bank presence	Log of number of branches	Log of number of deposits	Log of number of loans
Panel A: Baseline regressions				
Foreign acquisition	0.029*** [4.31]	-0.001 [0.12]	-0.271*** [13.29]	-0.909*** [26.10]
Constant		-0.093** [2.25]	7.844*** [144.64]	1.822*** [23.46]
Observations	117496	62910	59072	49211
R-squared	0.39	0.88	0.69	0.72
Bank dummies	Yes	Yes	Yes	Yes
Municipality dummies	Yes	Yes	Yes	Yes
Time dummies	Yes	Yes	Yes	Yes
Panel B: Interacting with GDP per capita				
Foreign acquisition	0.021** [2.36]	-0.012 [1.25]	-0.296*** [10.79]	-0.987*** [25.36]
Foreign acquisition* GDP per capita	0.004 [1.43]	0.004* [1.83]	0.008 [1.16]	0.022*** [4.00]
Constant		-0.096** [2.33]	7.849*** [144.42]	2.555*** [38.82]
Observations	116554	62630	58808	49051
R-squared	0.39	0.88	0.69	0.73
Bank dummies	Yes	Yes	Yes	Yes
Municipality dummies	Yes	Yes	Yes	Yes
Time dummies	Yes	Yes	Yes	Yes
Panel C: Interacting with share of rural population				
Foreign acquisition	0.076*** [3.49]	0.025* [1.86]	-0.179*** [5.60]	-0.794*** [18.16]
Foreign acquisition* share rural population	-0.001** [2.34]	-0.001** [2.54]	-0.003*** [3.98]	-0.005*** [4.08]
Constant		-0.096** [2.35]	7.862*** [146.19]	2.566*** [39.56]
Observations	116554	62630	58808	49051
R-squared	0.39	0.88	0.69	0.73
Bank dummies	Yes	Yes	Yes	Yes
Municipality dummies	Yes	Yes	Yes	Yes
Time dummies	Yes	Yes	Yes	Yes

Table A.I: Banks included in the country-level estimations

Table contains all banks that enter the aggregate regressions of Table III and shows their outreach and assets as of 1997, the first year in our sample period. The banks in parentheses are banks that were purchased by or merged with the first bank in the respective row during the period 1997 to 2005. For dates of foreign acquisitions see Table II. * indicates banks included in bank-level and bank-municipality-level regressions.

Bank	Ownership	Number of municipalities where bank is present as of 1997	Number of branches as of 1997	Number of deposit accounts as of 1997	Number of loans accounts as of 1997	Assets (in millions of pesos) as of 1997
Banregio	Domestic	1	3	3,343	325	1,395
Bansi	Domestic	1	1	9,714	173	524
Inbursa	Domestic	2	3	8,712	322	19,611
Interacciones	Domestic	2	2	9,336	100	7,625
Invex	Domestic	1	1	56	64	2,380
Ixe	Domestic	1	18	26,279	171	2,381
Mifel	Domestic	1	3	5,533	178	2,072
Bajio (Industrial)	Domestic	7	22	27,764	234	2,305
Banorte (Bancentro, Bancrecer, Banpais)*	Domestic	318	1,281	3,131,493	14,419	50,947
Scotiabank (Inverlat)*	Foreign	125	300	1,129,251	5,369	65,100
Citibank (Banamex, Confia)*	Foreign	332	1,536	5,054,764	35,637	266,544
BBVA (Bancomer, Promex)*	Foreign	432	2,039	4,976,738	82,109	322,250
HSBC (Bital, Republic of NY, Atlantico, Interestatal, Sureste)*	Foreign	320	1,767	6,993,346	10,273	115,847
Santander (Mexicano, Serfin)*	Foreign	247	836	3,948,551	6,139	209,131

Figure 1: Foreign bank participation and the percentage of municipalities with branches

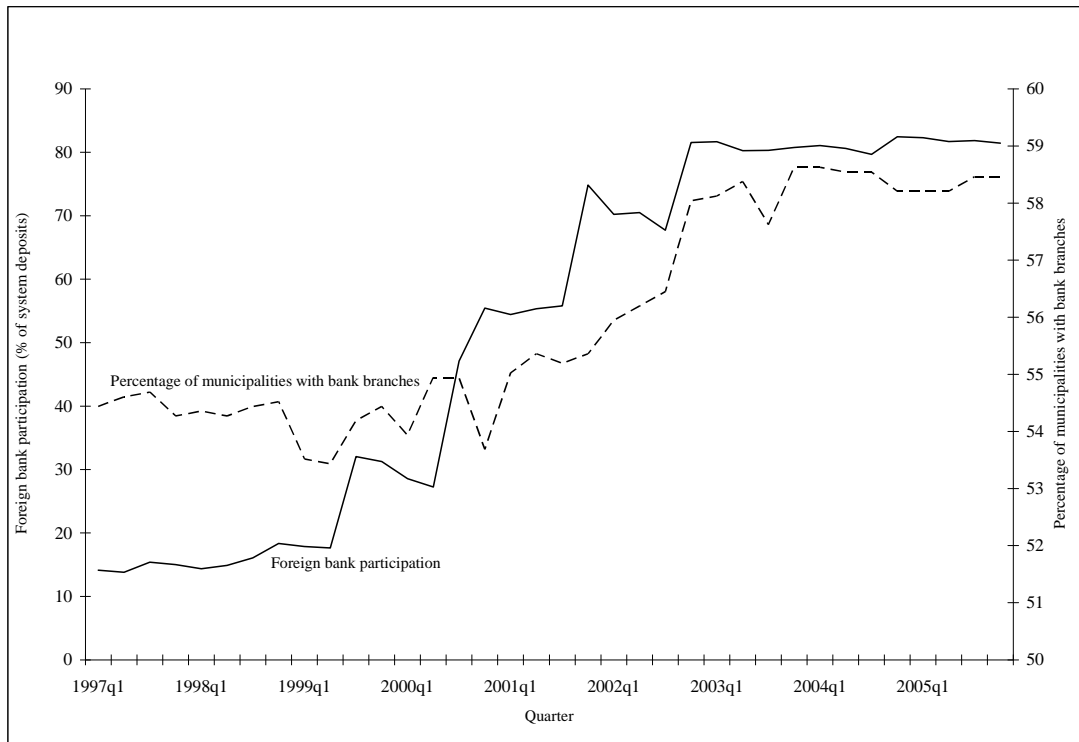


Figure 2: Foreign bank participation and branches per capita

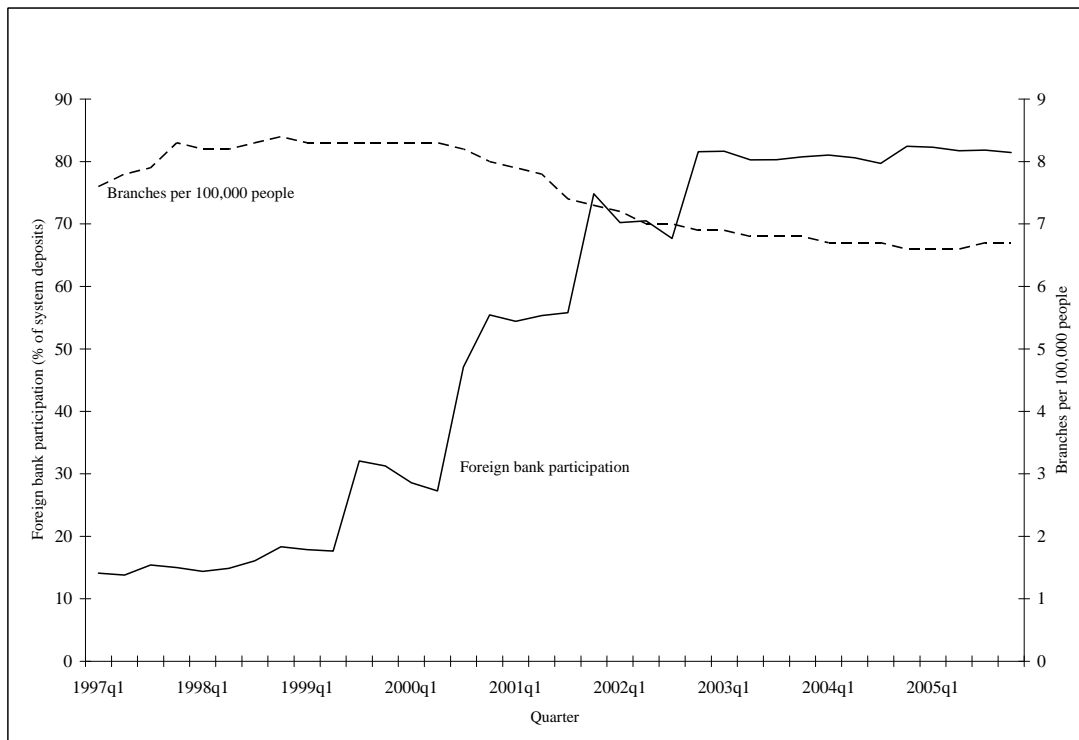


Figure 3: Foreign bank participation and deposit accounts per capita

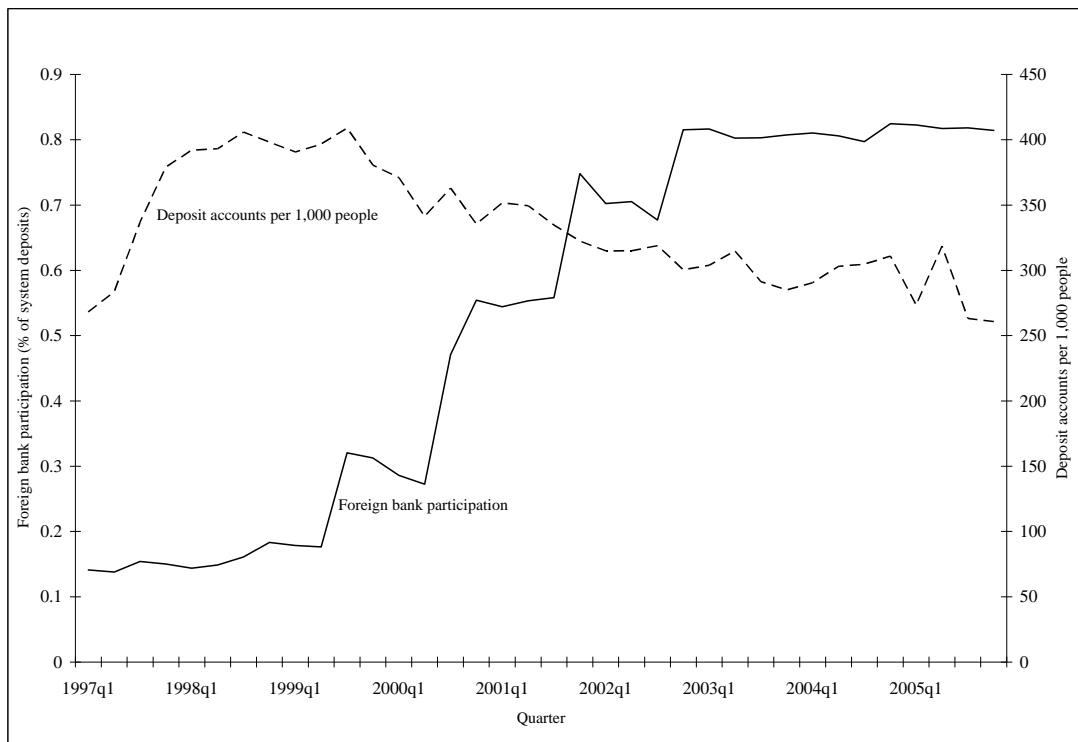


Figure 4: Foreign bank participation and loan accounts per capita

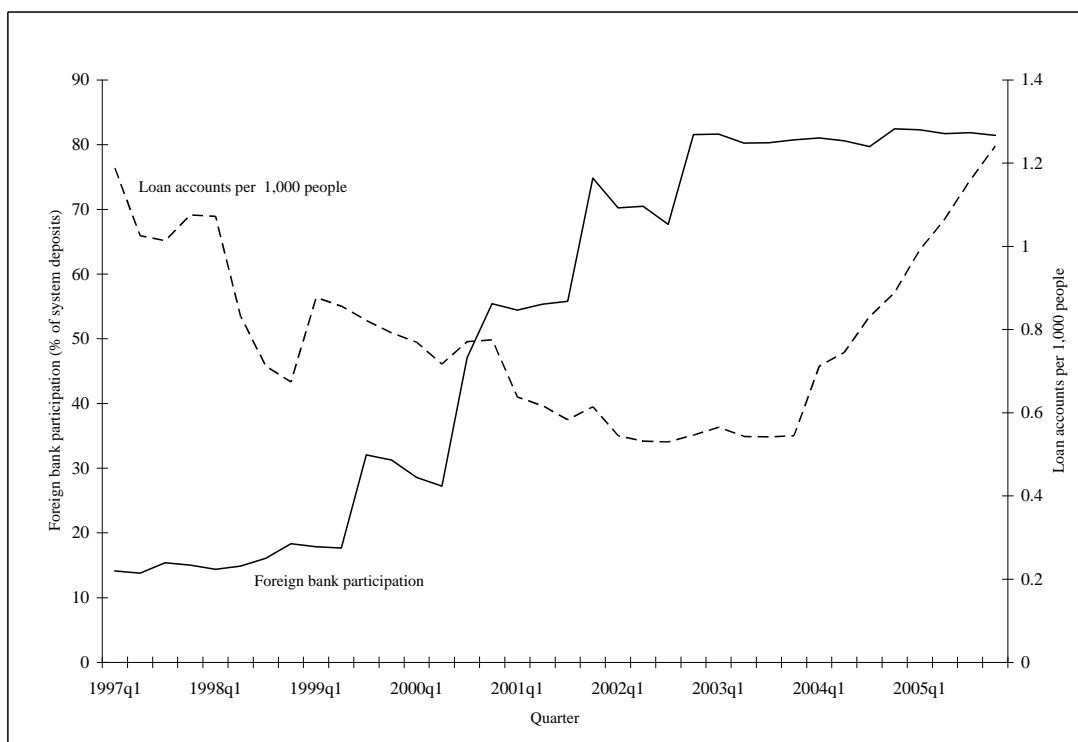


Figure 5: Foreign bank acquisitions and outreach

This figure shows the evolution of the average (i) number of municipalities with bank presence, (ii) number of bank branches, (iii) number of deposit accounts and (iv) number of loan accounts for the eight quarters before and after foreign acquisition. We first normalize data for the five foreign banks to $t=0$ for the acquisition quarter, and 100 for each series in $t=0$. Then we average across the five banks.

